

**(ix) Evidence appendix**

Copies of the following evidence is provided.

(1) US Patent No. 5,572,984 to Alden et al.

This patent was submitted as part of an information disclosure statement received May 9, 2005 by the USPTO and considered by the Examiner on 10/1/2006.

(2) US Patent No. 3,858,091 to Wikinson

This patent was submitted as part of an information disclosure statement received May 9, 2005 by the USPTO and considered by the Examiner on 10/1/2006.

(3) A publication identified as Vent Master Distribution System (MDS)

This publication was submitted as part of an information disclosure statement dated December 27, 2006 and considered by the Examiner on April 1, 2007.



# United States Patent [19]

Alden et al.

[11] Patent Number: 5,572,984

[45] Date of Patent: Nov. 12, 1996

[54] MODULAR FOOD SERVICE KIOSK

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[51] Int. Cl.<sup>6</sup> ..... F24C 15/20

[52] U.S. Cl. .... 126/299 R; 126/299 F; 126/39 R; 126/299 D

[58] Field of Search ..... 126/299 R, 39 R, 126/299 D, 299 F; 186/44; 237/19; 312/7.1

[56] References Cited

U.S. PATENT DOCUMENTS

2,897,813 8/1959 Schindler et al. .... 126/39 R

4,828,171 5/1989 Akin, Jr. et al. .... 237/19  
4,828,340 5/1989 Jorgensen .... 312/7.1  
5,163,536 11/1992 Tuhro et al. .... 186/44

Primary Examiner—Larry Jones  
Attorney, Agent, or Firm—Donald C. Casey

## [57] ABSTRACT

A modular kiosk for use in the food service industry is described. The kiosk includes one or more structural units having upstanding sides and back, and a horizontal roof with couplings on the back thereof for coupling appliances disposed in the unit to sources of energy. The unit typically would have metal, upper and lower sections, each receiving a different appliance for cooking or storing food. The unit can include a hood disposed at eye level and a griddle or deep fat fryer disposed below the hood in the middle section. When a hood is included, the hood is intended to be coupled to a flue. The device is intended to be used in malls and open areas for cooking and dispensing food.

9 Claims, 2 Drawing Sheets

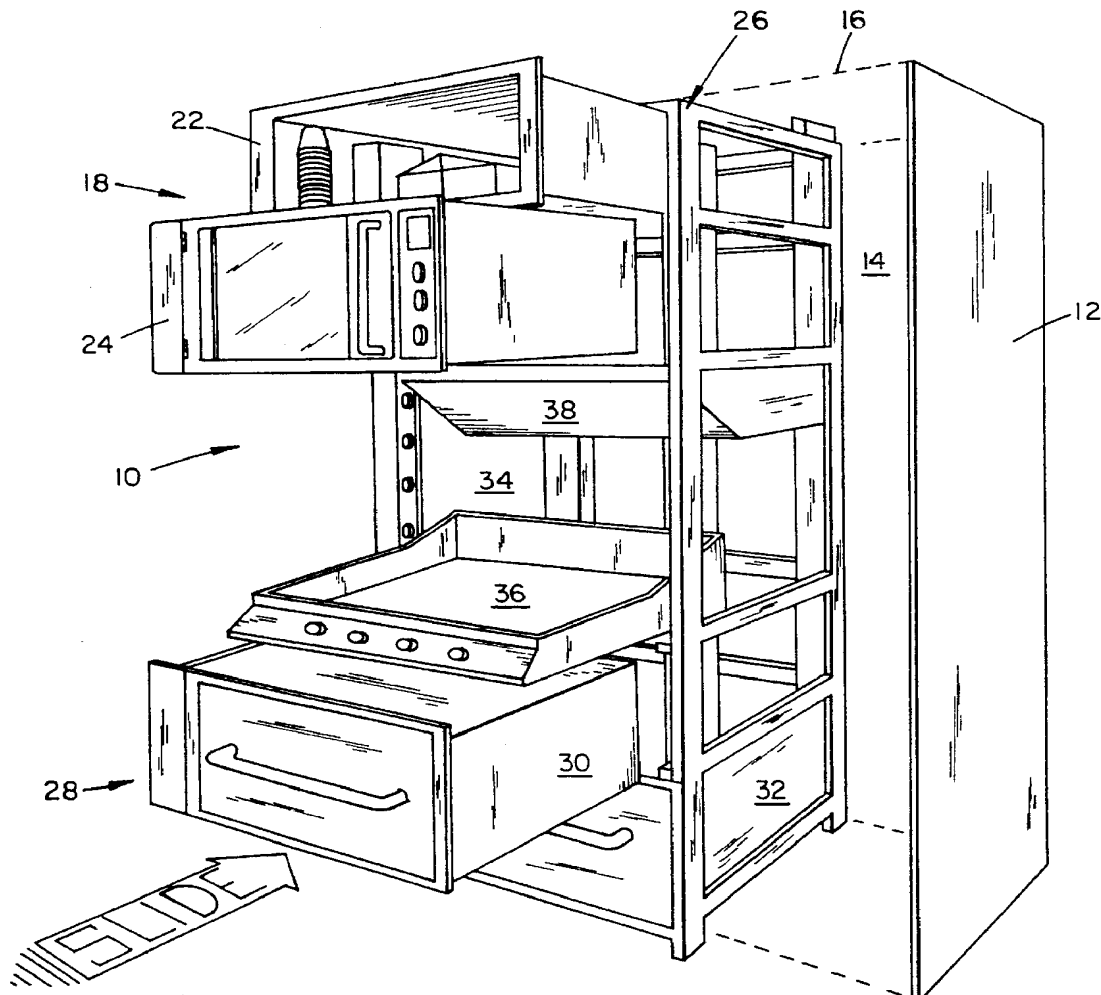
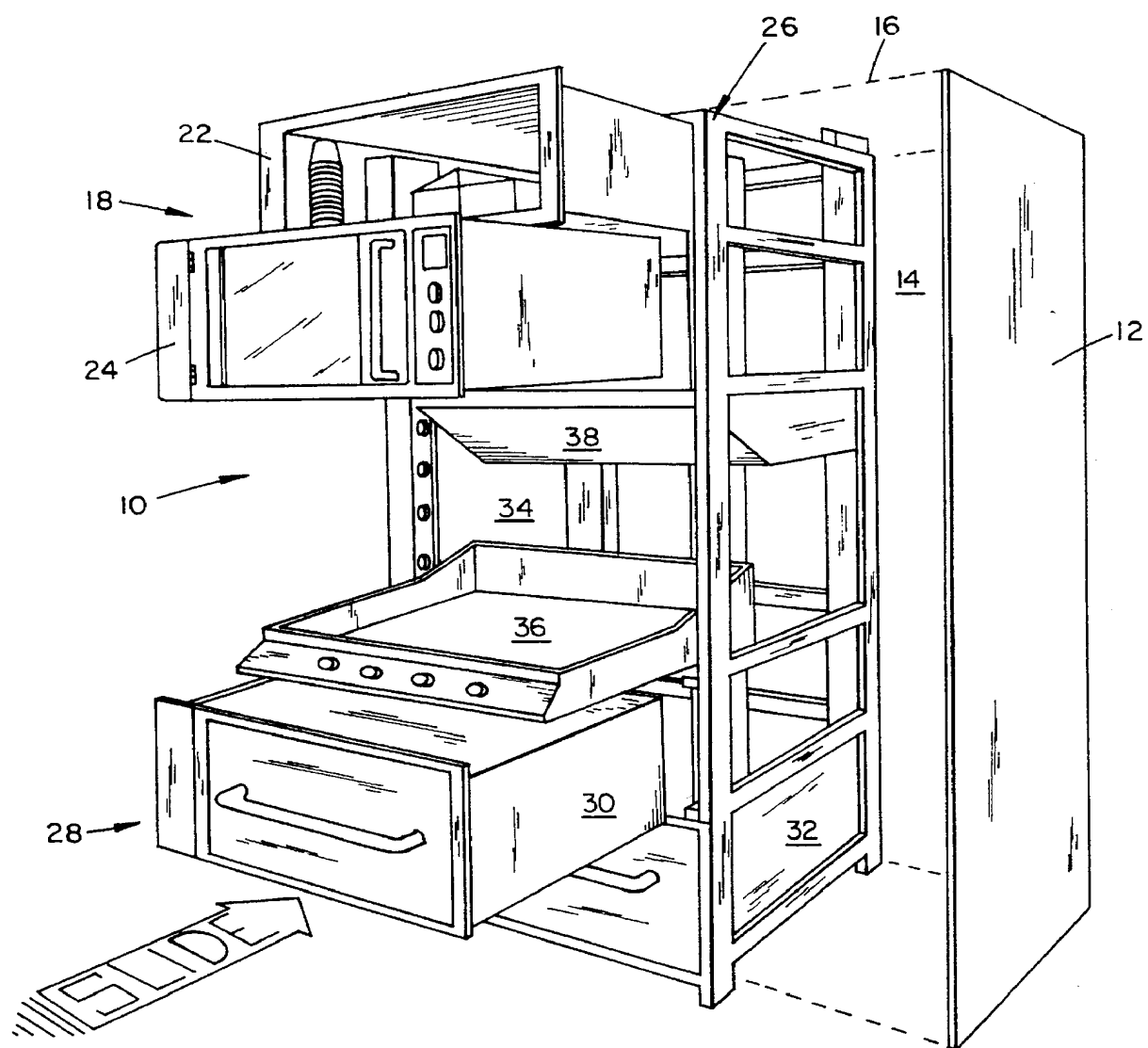


Figure 1



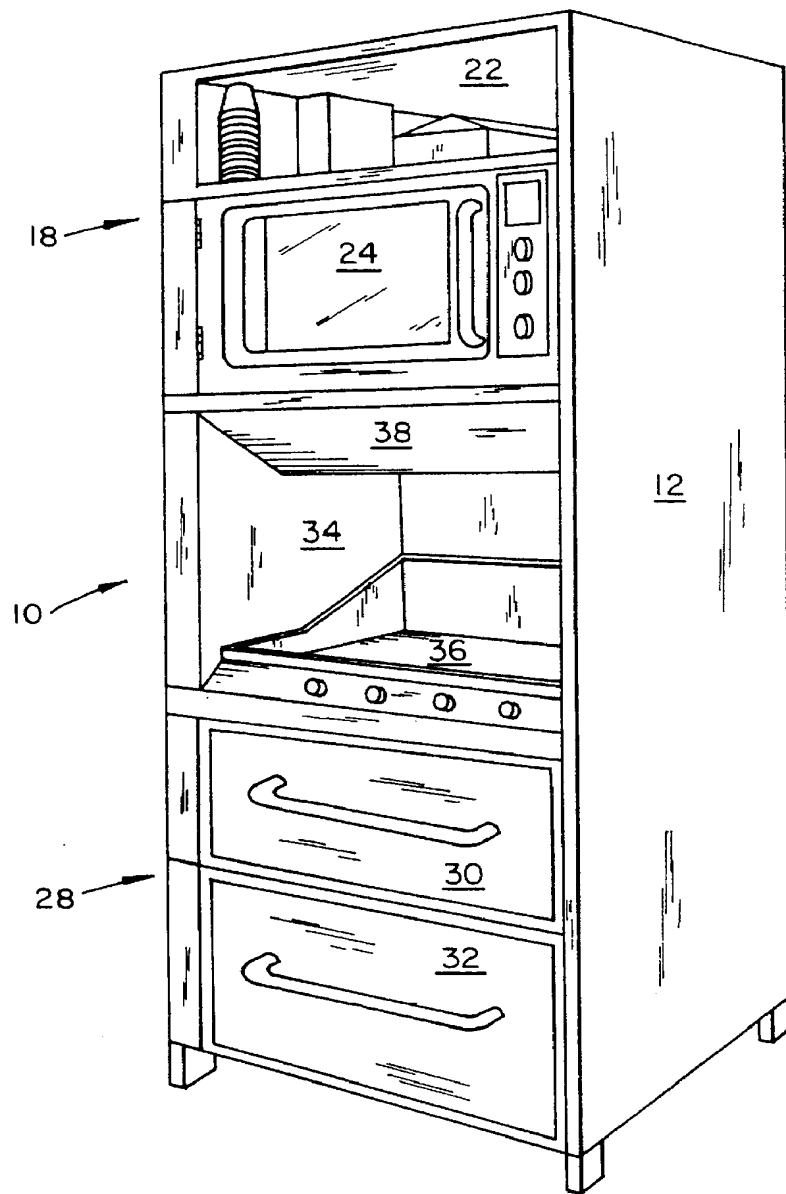


Figure 2

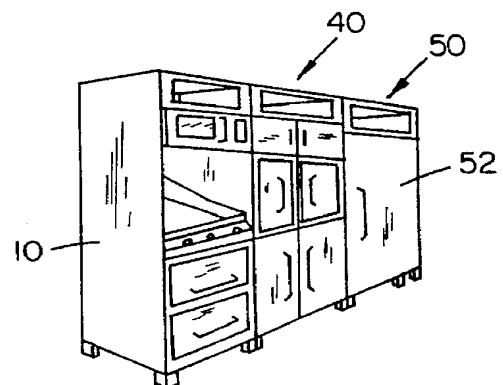


Figure 3

**MODULAR FOOD SERVICE KIOSK****FIELD OF THE INVENTION**

This invention relates to the food service industry and in particular to modular units which may be used to house separate appliances for cooking, storing and displaying food items, which units can be interconnected if necessary and are intended to be free standing with electrical, gas, and ventilation capabilities for said appliances.

**DESCRIPTION OF THE PRIOR ART**

Food service equipment used for the fast food industry often consists of free standing appliances purchased from a number of different suppliers or manufacturers which are not necessarily tailored to efficient utilization of space. In addition, prior art hoods are normally disposed at a height of 78 inches off the floor over griddles, deep fat fryers and the like. Therefore, there is no ability to utilize the space above the hoods.

In addition, in malls, shopping centers and the like, kiosk type food dispensing centers are of increasing importance. There is a need to provide food service equipment in which food can be prepared, stored and displayed with an efficient utilization of space so that kiosk units can provide prepared food for passers by.

Various attempts have been made in the prior art to provide modular type cooking equipment. For example, in U.S. Pat. No. 5,163,536 there is described a counter type system having two tiers wherein modules are interconnected in an end-to-end relationship to provide, for example, food preparation areas adjacent salad bars, steam tables and the like. This patent, however, does not describe an overhead system for utilization of overhead space and does not describe a full range of appliances normally found in fast food operations including provisions for servicing the same.

U.S. Pat. Nos. 2,897,813, 4,828,171 and 4,828,340 describe multipurpose chassis intended to provide base, midlevel and upper level storage space for holding different items. In U.S. Pat. Nos. 2,897,813 and 4,828,171 there are described chassis arrangements including slide out shelves, tracks and the like for gas fired appliances. In U.S. Pat. Nos. 4,828,340, the chassis structure is intended for stereo components, but provides for ventilation in the rear thereof.

There is a need, however, for all purpose modular components for housing the appliances normally needed in a food service operation, such as, griddles, deep fat fryers, steam or convection ovens, microwave ovens, refrigerators, and for providing for dry storage for raw materials, paper products and the like.

**SUMMARY OF THE INVENTION**

It is now been discovered that modular chassis can be provided which can house multiple appliances and provide ventilation and the utilities for them. Principally, at least one of such appliances would be a cooker such as a griddle, grill or deep fat fryer which would require a hood ventilation system. In order to more efficiently utilize space, the cooking device is provided at countertop level and the hood thereover is provided at eye level rather than at the conventional 78 inches above the floor. An overhead space is then provided which could house one or more of a convection or steam oven, microwave oven, and dry storage space. Below the countertop appliance, separate facilities can be provided for, for example, cold storage. It is intended that each

module include the utility hook-ups necessary to service the appliances therein including gas, electric, and, if desired, water. The hood which is provided would have to be connected to a flue and it would be desirable to provide for grease-laden effluent, preferably by water washing the same. The utilities would be provided in the back of the unit with the front exposed. Modular units could be interconnected with the common feature that the appliances disposed therein could be removed for servicing off site.

Accordingly, it is an object of this invention to provide modular kiosk units for the food service industry.

It is another object to provide a chassis having an upper portion, a middle portion, and a lower portion, said chassis intended to mount food service appliances in said areas including one or more of an oven, a griddle, a grill, deep fat fryer, cold storage and in addition, dry storage.

It is yet another object of this invention to provide modular kiosk chassis units for the food service industry which are fully serviced with utilities and ventilation so that appliances normally used in the food service industry may be mounted in said chassis; such service includes gas, electric, ventilation, and water.

These and other objects will become readily apparent with reference to the drawings and following description wherein:

**BRIEF DESCRIPTION OF DRAWINGS**

FIG. 1 is an exploded view of the modular kiosk chassis of this invention having individual appliance units partially removed.

FIG. 2 is a perspective view of the modular kiosk unit of FIG. 1 fully assembled.

FIG. 3 is a perspective view of three of the kiosk units of this invention interconnected.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

With attention to the drawings, FIGS. 1 and 2 show a preferred kiosk module 10 having vertical side walls 12 and a back wall 14. The side and back walls may further be interconnected by a top 16 to form a box to receive the stacked support members as will be described.

In the preferred embodiment of FIG. 1, the upper portion 18 of the chassis houses two components, a dry storage area 22, and an oven 24. Both members 22 and 24 are slidably received within the vertical chassis 26 on tracks (not shown) similar to a chest of drawers in construction. The tracks could have conventional locks so that the appliance would slide out but would have to be unlatched to be removed.

The lower portion 28 of chassis 26 mounts two drawers 30 and 32. These may be cold storage, or dry storage, or as will be obvious to those skilled in the art, one of drawers 30 may be replaced with, for example, a microwave oven whereas member 24 is preferably a steam or combination convection oven. In any event, members 30 as members 22 and 24, are intended to be slidably received within chassis 26 similar to a chest of drawers or a file cabinet. Chassis 26 further provides a central portion 34 which mounts a griddle 36 with a hood 38 thereabove. As will be obvious to those skilled in the art, the hood 38 is generally at the eye level of the chef working the griddle 36 whereby the area 18 above the hood 38 is available for other use. The griddle could be gas fired or electric, or as will be obvious to those skilled in the art, the griddle and member 30 could be replaced by a deep fat

fryer unit (not shown), a charcoal or gas grill (not shown) or any other type of cooker requiring hood ventilation.

In the kiosk shown in FIGS. 1 and 2, a chef could have cold meat products stored in drawers 30 and 32, and could be cooking on a gas griddle 36 while simultaneously preparing food in oven 24. The food thus prepared would be available for a passersby to purchase and it is contemplated that the module of this invention would be disposed in an open area and, possibly, accompanied by a counter with a cash register and the like.

With attention to FIG. 3, the chassis 26, which is shown only in FIG. 1, could be adapted to provide a separate module 40, which could house lower, middle and upper storage compartments, and a modified chassis could provide a module 50 which would combine the center, lower and upper portions to provide, for example, a freezer compartment 52. It will be obvious to those skilled in the art, however, that the basic module of this invention can be substantially modified as desired to accommodate conventional types of appliances dimensioned to fit in the standard chassis spaces. Typically, such appliances would fit on internal rails and be slidably received in the chassis which in turn would be received within an outer box. The utilities for the appliances would normally be attached at the back. In this way, the hood system can be directly vented into a vent duct (not shown) and, if desired, grease laden effluent can be water washed in the conventional fashion. Also typically captured grease and water may be separated so that the water can be recycled.

The embodiments shown herein do not picture a drain or a water attachment. It is contemplated, however, that such would be available, if needed. Also not pictured is a conventional make-up table which could occupy the middle section in place of for example, a storage compartment.

The requirements for a vent duct or flue, gas and electrical attachments, and other similar requirements are external to the kiosk of this invention and would be provided in the conventional fashion.

In summary, a chassis for use in the food service industry is provided which has base, midlevel and upper level sections for housing conventional food service appliances for use in cooking food, storing food, displaying food or storing food or food related items. It is intended that the chassis will have connections for the delivery of gas and electricity to run the appliances, and a flue duct for connection to a vent or a hood type installation within the chassis. If desired, it is further intended that a drain and water connection be provided within the chassis.

It will be readily seen by one of ordinary skill in the art that the present invention fulfills all of the objects set forth above. After reading the foregoing specification, one of ordinary skill will be able to effect various changes, substitutions of equivalents and various other aspects of the

invention as broadly disclosed herein. It is therefore intended that the protection granted hereon be limited only by the definition contained in the appended claims and equivalents thereof.

We claim:

1. A modular kiosk for food service preparation and storage comprising a first structural unit being rectangular in cross section and having upstanding side and rear walls and a horizontal roof and an open front;

horizontal upper, middle and lower sections formed in said unit each section adapted to slidably receive a service unit for preparing, cooking or storing food, said middle section including a ventilation hood mounted therein and cooking means disposed in said middle section below said hood for cooking food, the service unit in at least one of said lower or upper section including dry storage drawer means for storing supplies utility hook-up means mounted on the back wall of said unit for coupling appliances to a source of energy; and flue hook-up means carried by said unit for coupling said hood to an external flue.

2. The kiosk of claim 1 wherein said utility hookup means includes electrical hook-up means.

3. The kiosk of claim 1 wherein said utility hookup means includes natural gas hook-up means.

4. The kiosk of claim 1 further comprising a plurality of said units interconnected at the sides thereof.

5. The kiosk of claim 1 further comprising a second structural unit being rectangular in cross section and having upstanding side and rear walls and a horizontal roof and an open front interconnected to said first unit at a side thereof.

6. The kiosk of claim 5 wherein said second structural unit includes means for slidably receiving a cold storage unit therein.

7. The kiosk of claim 5 wherein said second unit includes upper, middle and lower sections and make-up table means mounted in said middle section.

8. The kiosk of claim 7 further comprising cold storage means mounted in one of said upper and lower sections.

9. A modular kiosk for food service preparation and storage comprising: a structural module being rectangular in cross section and having side and rear walls, a horizontal roof and an open front;

horizontal upper, middle and lower sections formed in said module each section adapted to slidably receive a service unit for preparing, storing or cooking for said service units including open food cooking means and hood therefor, oven means, cold storage means, dry storage means, and make-up table means; and utility hook-up means mounted in the back of said module for coupling a service unit to a source of energy, drain or flue.

\* \* \* \* \*

[54] INTERCHANGEABLE PLUG-IN MODULAR  
APPLIANCE UNIT SYSTEM

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[21] Appl. No.: 286,772

[52] U.S. Cl. .... 317/120, 312/297, 339/32

[51] Int. Cl. .... H02b 1/04

[58] Field of Search..... 317/101 R, 101 CB, 117,  
317/118, 120; 312/297; 339/32

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Primary Examiner—Robert K. Schaefer

Assistant Examiner—Gerald P. Tolin

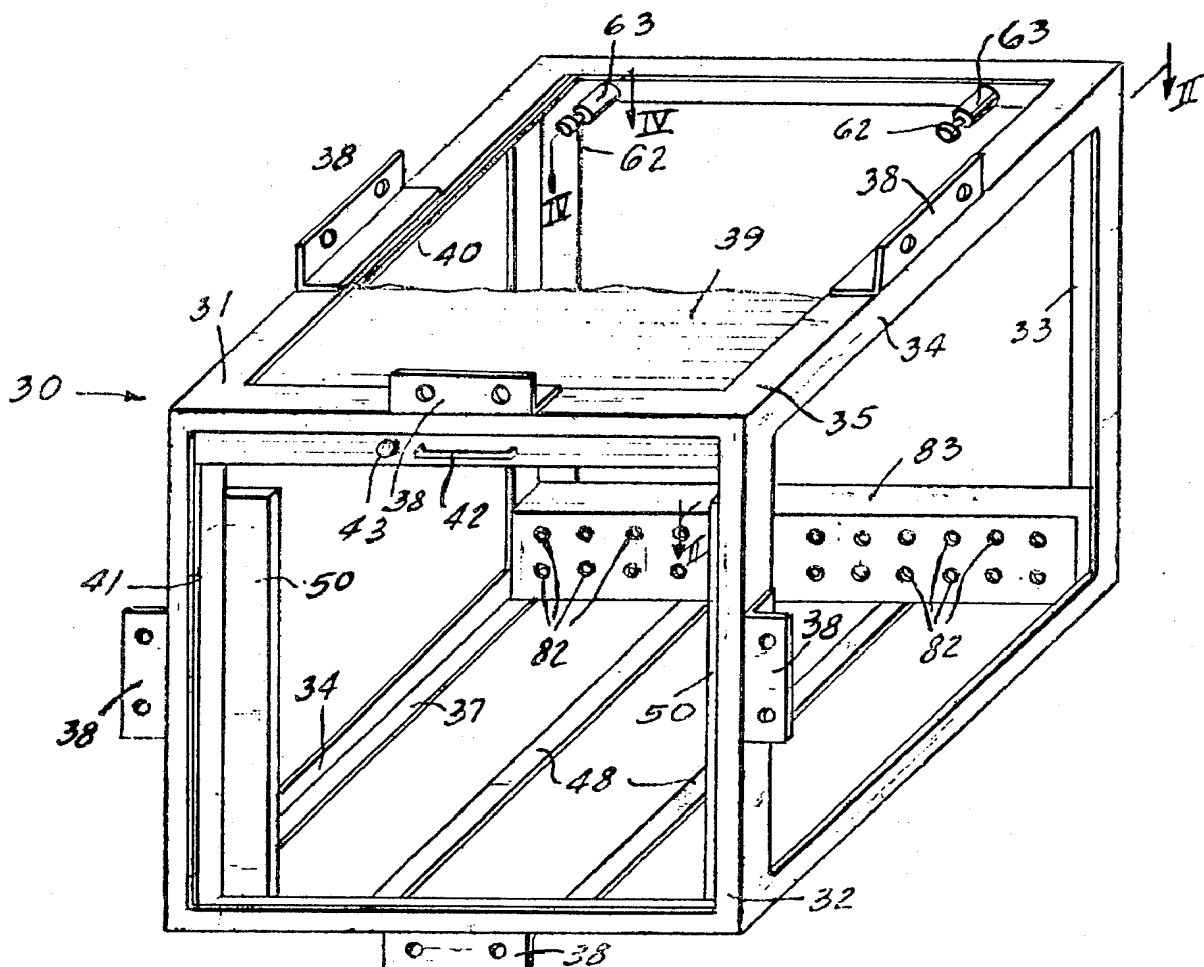
Attorney, Agent, or Firm—Hill, Gross, Simpson, Van  
Santen, Steadman, Chiara & Simpson

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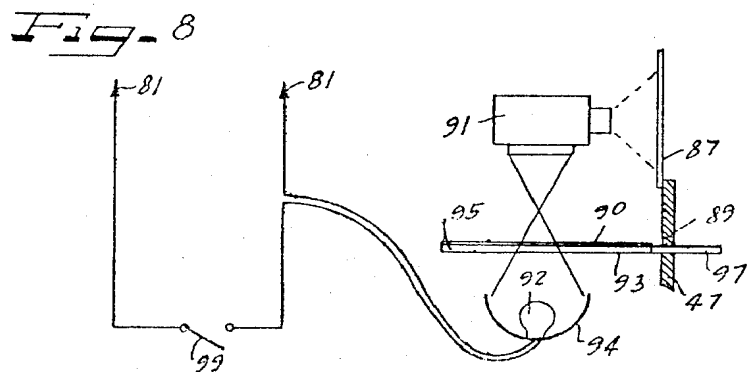
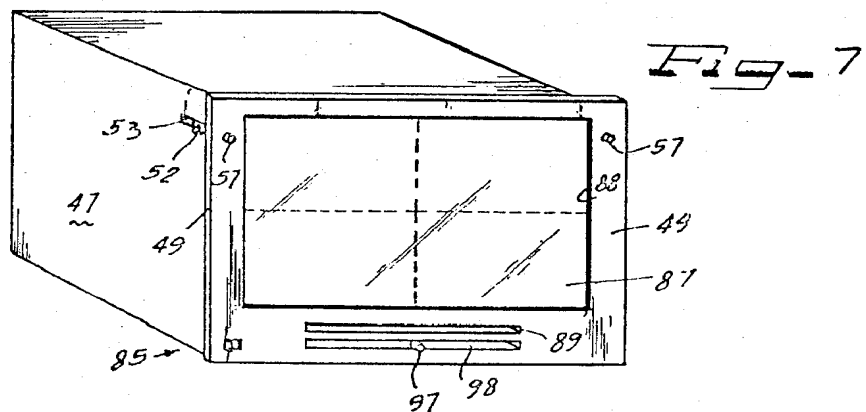
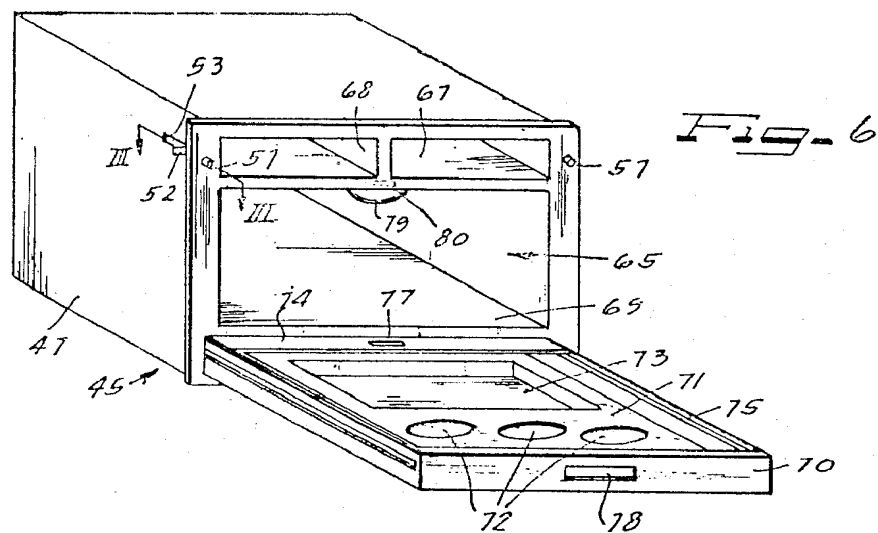
ABSTRACT

A selective appliance is inserted into a chamber provided within a hollow frame having an opening through which the appliance is received and with the front of the appliance visually and manually accessible at the frame opening. Insertion of the appliance automatically effects releasable selective operating electrical connection. Releasable retaining means hold the appliance in the frame. Mounting of the frame may be at a convenient location in which the appliance or any selected one of a number of appliances may be most useful, such as under the dash of an automobile for access to the automobile driver or a seat companion, in a pleasure boat under a dash panel or in a cabin, in a residential building, and the like.

15 Claims, 29 Drawing Figures







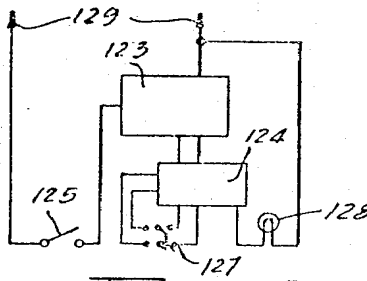
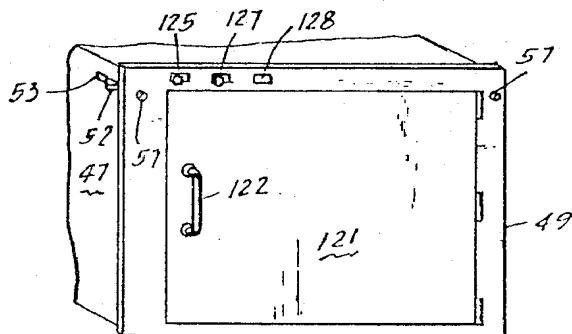
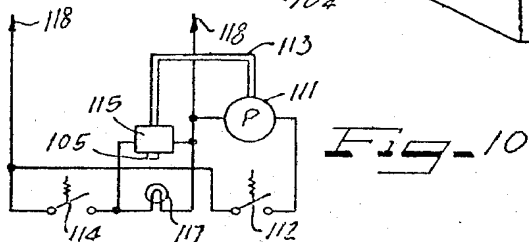
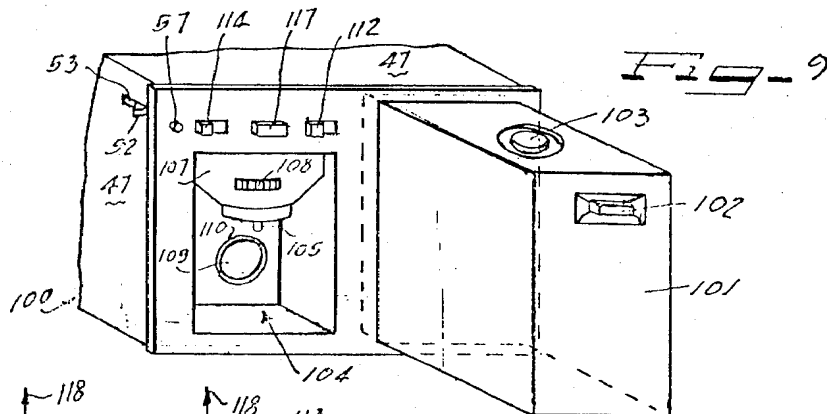


Fig. 11

Fig. 12

Fig. 13

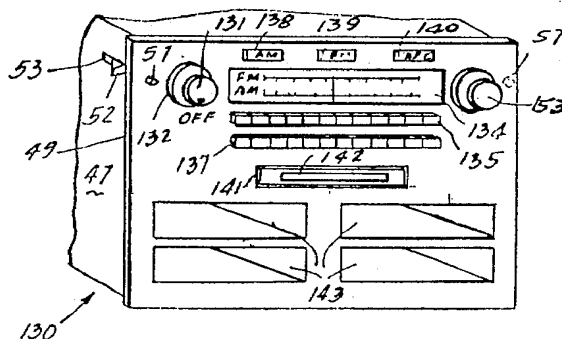
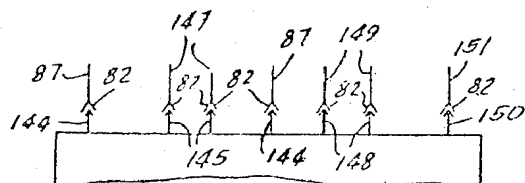
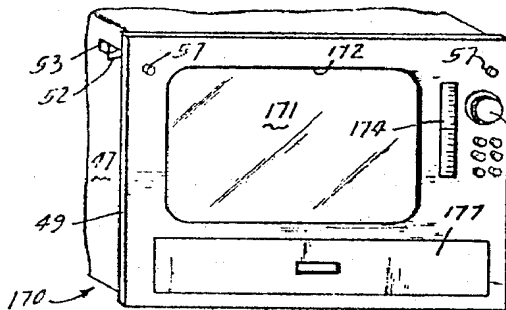
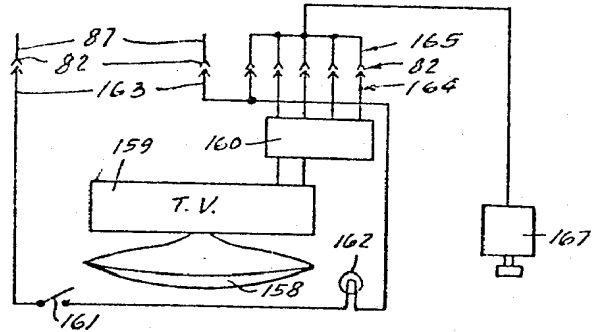
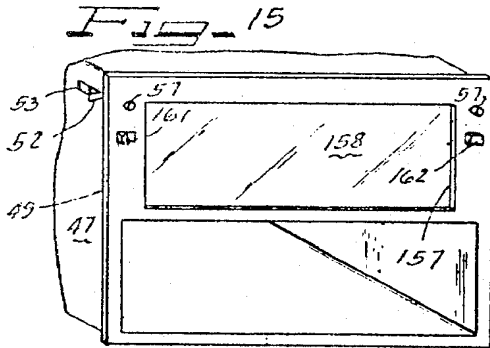
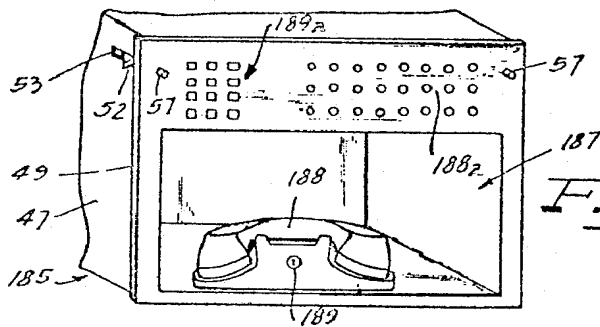
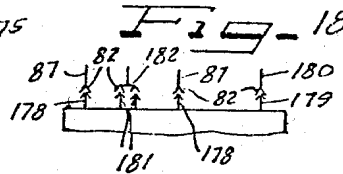


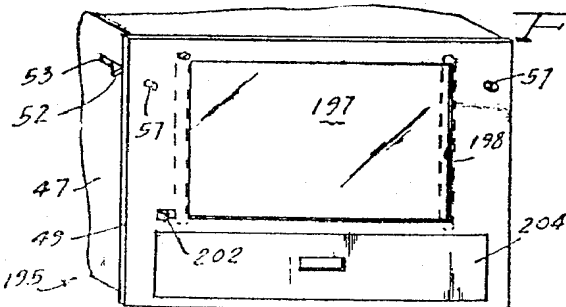
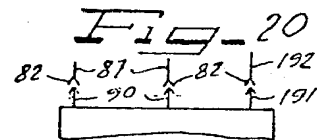
Fig. 14



**Fig. 17**



**Fig. 19**



**Fig. 21**

**Fig. 22**

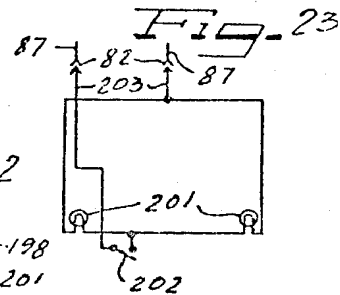
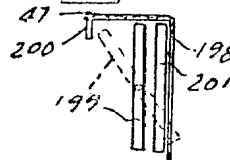


Fig-24

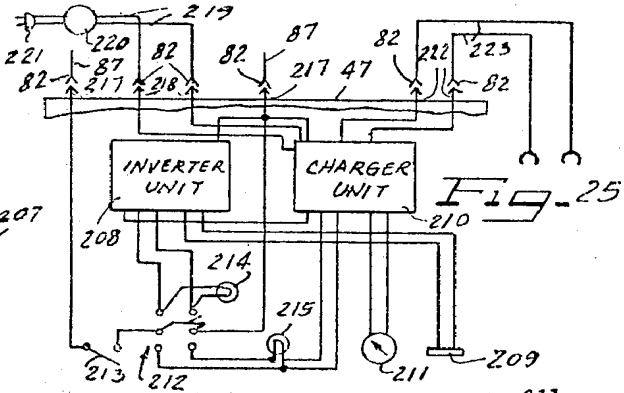
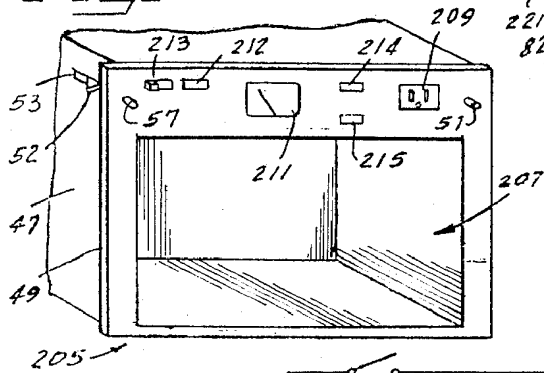


Fig-26

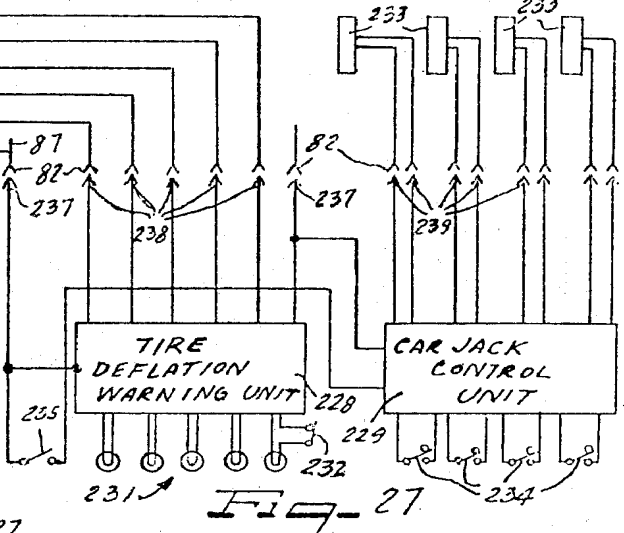
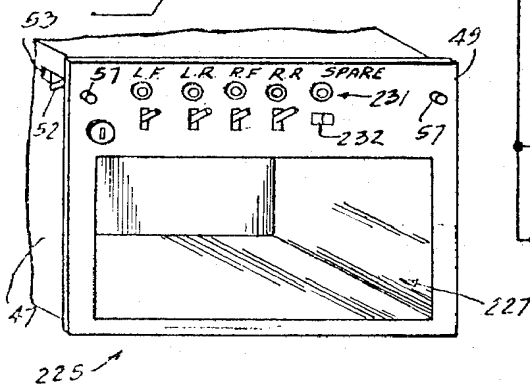


Fig-28

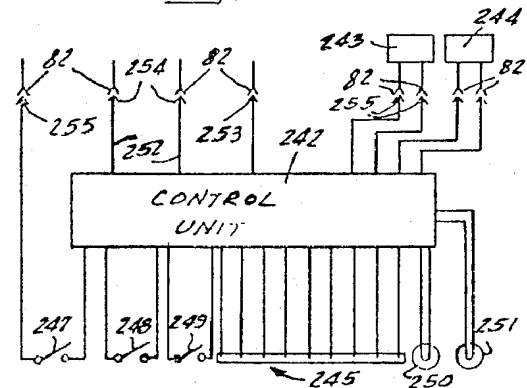
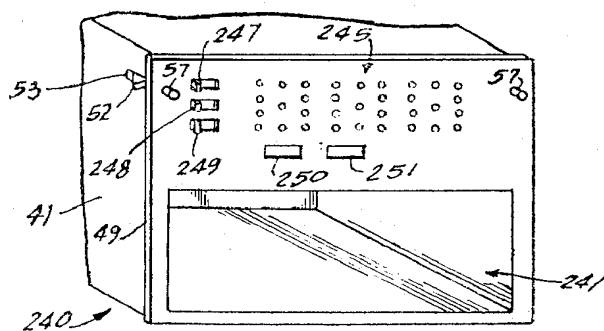


Fig-29

## INTERCHANGEABLE PLUG-IN MODULAR APPLIANCE UNIT SYSTEM

This invention relates to plug-in modular appliance unit systems, and is more particularly concerned with enabling appliances to be selectively and alternatively plugged into useful position.

Heretofore, numerous and varied appliances have been provided to meet a large number of specific requirements, but, so far as I am aware, all such appliances have had to be specially mounted by means of structure and attachments peculiar to the particular appliance. This has precluded use of a particular appliance selectively at different locations. It has also precluded selectively employing different appliances at any one location without a major installation effort in regard to each appliance in addition to a major removal effort for any appliance already at that location. For example, certain appliances have been proposed for mounting in an automobile, such as on the dashboard or panel. This has in prior arrangements required special clamps or brackets and most generally the drilling of special holes in the dashboard or other mounting structure to accommodate screws for attaching the brackets or other attaching means of the appliance. When a different appliance was desired, it was necessary either to add it to an unoccupied place on the supporting structure, or to remove the previous appliance and then again go through the process of securing the alternate appliance in place. Further, it has been impractical heretofore to use any of the fixed appliances for example mounted in an automobile, at any other location. Thus if a pleasure boat owner wished to have an appliance similar to one in his automobile, it was required that he purchase another such appliance for use in his boat unless he was willing to dismantle the appliance from the automobile and install it in the boat in similar fashion, and then if he wished to employ the same appliance again in the automobile go through the laborious dismantling and reinstallation procedures.

According to the present invention, the foregoing and other disadvantages, defects, inefficiencies, shortcomings and problems in prior structures are overcome and important advantages and improvements are attained by the disclosed plug-in appliance unit system as will hereinafter become apparent.

An important object of the present invention is to provide a new and improved plug-in modular appliance unit system wherein an appliance unit is readily transferable to and between use locations.

Another object of the invention is to provide a new and improved plug-in modular appliance unit system enabling ready selective mounting of any of a number of optional units.

Still another object of the invention is to provide a plug-in modular appliance unit system a novel carrying frame structure for convenient plug-in reception of a selected modular unit.

Yet another object of the invention is to provide novel means in a plug-in modular appliance unit assembly for effecting selective electrical connections.

A still further object of the invention is to provide a number of new and improved modular appliance units adapted for a system of selective, replaceable, interchangeable, optional use in a common carrying means or mount.

Other objects, features and advantages of the invention will be readily apparent from the following description of certain preferred embodiments thereof, taken in conjunction with the accompanying drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts embodied in the disclosure, and in which:

FIG. 1 is an isometric view of a mount receptive of a selected plug-in modular appliance;

FIG. 2 is a horizontal sectional elevational view taken substantially along the line II—II of FIG. 1 and showing an appliance in place in the mount;

FIG. 3 is an enlarged fragmentary sectional detail view taken substantially along the line III—III of FIG. 1;

FIG. 4 is an enlarged fragmentary sectional view taken substantially on the line IV—IV of FIG. 1;

FIG. 5 is an exploded assembly view, partially in section, illustrating an arrangement for effecting electrical connections in the system;

FIG. 6 is an isometric view of a basic appliance module;

FIG. 7 is an isometric view of a modified appliance module especially adapted for map reading;

FIG. 8 is a schematic illustration illustrating the microfiche reader means of the module of FIG. 7;

FIG. 9 is a fragmentary isometric view of an appliance module embodying coffee making equipment;

FIG. 10 is an electrohydraulic diagram involving the module of FIG. 9;

FIGS. 11 and 12 show a fragmentary isometric view of a refrigerator module and its electrical diagram, respectively;

FIGS. 13 and 14 show, respectively, a fragmentary isometric view of an entertainment module and a schematic showing of its electrical connections;

FIGS. 15 and 16 show, respectively, a fragmentary isometric of a T.V. module and its electrical schematic, especially suited for closed circuit rear view purposes;

FIGS. 17 and 18 illustrate a fragmentary isometric view of a station T.V. receiver module and electrical connection schematic, respectively;

FIGS. 19 and 20 show, respectively, a fragmentary isometric view of a telephone module and a schematic of its electrical connections;

FIG. 21 is a fragmentary isometric view of a vanity module;

FIG. 22 is a schematic illustration of the mounting of the mirror in FIG. 21;

FIG. 23 is an electrical schematic related to FIG. 21;

FIGS. 24 and 25 show, respectively, a fragmentary isometric of a combination electrical outlet, battery charger and storage module and its electrical circuitry;

FIGS. 26 and 27 show, respectively, an isometric perspective of a tire pressure indicating and jack control module and its electrical control circuitry; and

FIGS. 28 and 29 show a fragmentary isometric view of a distance measuring module and its electrical circuitry.

Central to a system according to the present invention is module-mounting means adapted to receive any preferred appliance module in a selectively releasable manner enabling the module to be carried in the mount indefinitely but permitting quick release and removal of the module as desired for use permanently, or temporarily at another location and to be then replaced, or to permit reception of a different module in the mount.

By way of example a mount 30 (FIG. 1) is shown comprising a basic generally cubical frame 31 which may be in the open frame format shown or may comprise a box-like housing comprising wall panels. In any event, the frame 31 has a front end 32, an opposite back end 33, respective opposite sides 34, a top 35 and a bottom 37. Suitable means are provided on the frame 31 for attaching it to a supporting structure. Representative of such attaching means are brackets 38 shown at various locations on the top, side and front areas of the frame but which may be located at any preferred place as may be convenient or desirable to enable efficient mounting of the frame with its front end 32 disposed in a convenient position for access into a hollow appliance chamber therein having an appliance-receiving opening therinto defined by the front end means of the frame.

A readily openable closure may be provided across the front opening comprising, for example, a flexibly hinged slat roll-top type overhead slide door 39 movable into open position along respective opposite side tracks 40 along the inner sides of the frame top 31 (FIG. 1) and in downward extensions 41 of the track along the sides of the front 32 of the frame (FIGS. 1 and 2). To facilitate sliding the door between the open position shown in FIG. 1 and the closed position shown in FIG. 2 it is desirably provided with a handle 42. The door may also be provided with latching or locking means such as a key operated lock 43 adapted in the closed position of the door to engage releasably with keeper means 44 along the bottom of the frame at the front 32.

Within the ample chamber provided by the mount 30 is adapted to be received a selected modular appliance unit such, for example, as a basic unit 45 (FIGS. 2 and 6) especially suitable for automobile use where the mount 30 may be installed under or in the dash panel in the driver's compartment of the vehicle with the front 32 suitably exposed for convenient access thereto. To this end, the module 45 comprises a housing 47 which is of a height and width to be received easily through the front opening in the frame 31 and is of a length to take advantage of the depth within the chamber to the maximum desirable extent. In mounting the module 45, it is inserted back end first through the front opening in the mounting frame and pushed slidably inwardly along bottom supports such as rails 48 along the bottom of the mounting frame, until a lateral flange 49 along at least the sides of the front end of the housing 47 engages against inset stop flanges 50 vertically at each side of the opening and which may be provided on front side vertical reinforcing and door track providing posts 51. When the module 45 has been fully inserted into the mounting frame with the flange 49 stopped against the flanges 50, releaseable latching detent means become effective, herein comprising a pair of pawls 52 (FIGS. 2 and 3) mounted normally to project outwardly through respective clearance slots 53 in the side walls of the housing or cabinet 47 and properly spaced rearwardly adjacent to the flange 49 at each side of the housing to cooperate therewith in engaging the inner side of the respective cooperating stop flange 50 whereby after the module has been fully inserted into the mounting frame the latch pawls 52 will hold the same against unintentional outward displacement relative to the mount.

Although the latching elements or pawls 52 may be of a type to be moved into latching position after the

module has been moved into position within the mount chamber, a desirable arrangement comprises having the detents 52 of a form and relationship which facilitates automatic snapping thereof into the latching relation with the flanges 50 serving as keepers. To this end, the pawls 52 are pivotally mounted on a spring biased plunger 54 reciprocally carried in a tubular blind and socket 55 from an open end of which projects a manipulating button 57 normally extending outwardly through a clearance hole 58 in the front of the housing 47 for digital pressure inward movement against the thrust of a biasing spring 59 which normally urges the plunger outwardly and thus enables the detent 52 to project through a slot 60 in the wall of the guide tube 55 aligned with the slot 53. In this position, biasing means such as a spring 61 urges the detent 52 outwardly into latching position, but permits the detent to be swung inwardly to clear the respective frame flange 50 as the detent cams thereon during the inward installing movement of the module 45, with the detent snapping into latching position at the inside of the flange 50 automatically after clearing such flange. To release the modules for removal from the mounting frame, inward pressure against the button 57 correspondingly moves the latch 52 not only inwardly longitudinally in the guide tube 55 but also inwardly laterally by camming of the detent along the inner edge defining the slot 60. For double assurance against unintended release of the module as for example by accidental pressure against the release button 57, two of the latch devices are provided so that in order to release the dual latching mechanisms, both buttons 57 must be simultaneously depressed to release the latching detents 52.

Insertion of the module 45 into the mounting frame 30 involves simply carrying the module to and inserting it rear end first into the access opening into the mounting frame and then pushing the module home. In order to facilitate removal of the module from the mounting frame, means are provided for partially ejecting the module out of the mounting frame opening to enable ready manipulation of the module, as by grasping the flange 49, to pull it further out of the frame until the module can be safely grasped to carry it away. To this end, ejector means conveniently comprising spring biased ejection plungers 62 are mounted on the inner side of the rear end 33 of the mounting frame and adapted to be loaded when the module 45 is enplaced in the frame and held under the spring biased load as long as the latches 52 are operative to hold the module in place, but to function to release the stored energy and thrust the module a limited distance from the stop flanges 50 when the latches 52 are released. Accordingly, the plungers 62 are reciprocally guidedly carried by tubular members 63 mounted on the inner sides of the upper portions of the rear end 33 of the mounting frame to support the plungers for engagement by the upper inner or rear end of the housing 47. As such rear end portion of the housing presses under manual force against the plungers 62, respective compression springs 64 within the guide 63 are compressed and the energy stored to be released with it is desired to remove the module, evidenced by the release of the latches 52.

As seen in FIG. 6, the module 45 is provided with various conveniences including a generous storage compartment 65 having thereabove a shelf 67 which may be divided by a front to rear partition 68 into a plurality of sections. Below a false bottom 69 defining the

floor of the compartment 65, is mounted a slide-out drawer 70 which may be provided with convenience means therein such as a recessed panel 71 useful for drive-in dining and therefore provided with beverage cup wells or sockets 72 and a food receptacle well 73. In addition, to permit the drawer 70 to be used as a flat table or desk, it is desirably provided with a slidable table lid or cover 74 which may be mounted at its side edges and respective slide bearing grooves 75 in the upper inner portions of the side walls of the drawer 70. When slid back, the table cover 74 exposes the convenience panel 71, while when the cover 74 is drawn into closing position it provides a smooth desk or tabletop. For convenience in shifting the table panel 74 open and closed, it is provided with depressed finger grip handle means 77. The front of the drawer 70 is also desirably provided with handle means 78 which may be of the depressed groove and finger grip type.

To illuminate the interior of the compartment 65 and possibly also the pull-out drawer 70 in its extended position, a lamp 79 is desirably mounted on the roof of the compartment 65 at any convenient location, herein shown as near the front, but may be located further rearwardly if preferred. This lamp is adapted to be connected in an electrical circuit controlled by a switch 80 conveniently mounted on the front of the cabinet 47.

Means are provided for automatically connecting the electrical circuit for the lamp 79 to a conveniently accessible energy source such, for example, as the storage battery of an automobile in which the mount 30 may be supported. For this purpose, the lower inner or rear end of the housing 47 has projecting rearwardly therefrom suitable plugs 81 automatically engageable to effect electrical connection in respective jack sockets or contacts 82 in a jack bar 83 mounted within the lower rear portion of the compartment within the mount 30 (FIGS. 1 and 5). Each of the jacks 82 has a terminal 84 projecting rearwardly and engageable by or adapted to have secured thereto a terminal 85 of an electrical lead 87 one of which may be the hot line from the energy source such as a battery and the other may be a ground wire. In order to accommodate numerous different electrical connections of various modular appliance units that may be optionally accommodated in the mount 30 through the same jack bar 83, the bar is provided with a suitable multiplicity of the jack sockets 82 with respective terminals 84 which are adapted to be connected in selected circuit with electrical devices as desired, in addition to the basic connection with the energy source and ground.

In FIGS. 7 and 8 is depicted a modular appliance unit 85 having the same housing 47 as the module 45, but adapted for and equipped to facilitate map reading. To this end, a rear projection screen 87 is mounted across an opening 88 in the front of the cabinet while, below the screen, the cabinet front has a map card-receiving horizontal slot 89 through which are adapted to be inserted selective map cards or microfiche holders 90 for scanning by an optical unit 91 suitably mounted within the housing 47 to project an image onto the back of the translucent screen 87 as scanned from the entire card 90 or any selected portion thereof. Although the scanner and projection unit 91 may be of the reflected image projection type, it is shown as a microfiche scanner wherein a lamp 92 mounted in the housing 47 below a movable translucent horizontal carrier 93 provides illumination focused by means such as a reflector

94 onto a selected microfiche window of the card 90 for pick-up by the scanner. Suitable clip means 95 on the back margin of the carrier 93 frictionally holds the map card 90. Manipulation of the carrier 93 to bring into the scanning field of the unit 91 any selected portion of the card 90 is adapted to be effected by means of a handle 97 projecting forwardly through a suitable horizontal slot 98 in the front of the cabinet housing 47 adjacently below the slot 89 and of a width to enable at least partial movement of the carrier 93 outwardly to maneuver the card 90 out through its slot 89 when it is desired to remove or replace the same or even to insert a card in viewing position initially. Control of the lamp 92 is through an electrical circuit including a switch 99 conveniently mounted on the front of the housing and connectable through the plugs 81 with the appropriate jacks 82 of the jack bar 83 when the module 85 is installed in the mount 30. It will be appreciated that the map reader module 85 provides a most convenient device for map reading by motorists, boatmen, air plane pilots, and the like, eliminating any need for opening and folding the usual road, area or marine maps. For example, with route maps by simply maneuvering the handle 97, the portion of the map disclosing the area in which the vehicle is located can be easily centered on the screen 87.

In FIGS. 9 and 10 are disclosed features of a modular appliance unit 100 especially adapted for dispensing water or beverage, and more particularly coffee. To this end, the module 100 includes a slide-out water tank 101 movable into and out of one side of the front of the module cabinet 47. In its front wall, the tank 101 has a manipulating handle 102 while for filling purposes a top filler opening normally closed by removable closure 103 is provided. At the opposite side of the front of the cabinet is provided a dispensing recess 104 in the upper portion of which are provided means for dispensing water from the tank 101 through a downwardly directed nozzle 105. For making coffee, a downwardly discharging storage hopper 107 may be associated with the nozzle 105 and is equipped with suitable means operable through a dispensing wheel or lever 108 to measure and effect deposit of the desired quantity of powdered instant coffee from the hopper 107 into a cup 109 such as a paper cup which may be withdrawn from a dispensing magazine 110 having a delivery opening at the back of the recess 104. Although hot water will be desired from the nozzle 105 for coffee, the arrangement is preferably such that plain cold drinking water may be derived from the nozzle. To this end, an electrically operated pump 111 is mounted in association with the tank 101 so that when a normally open switch 112 is closed, the pump will be operated to deliver water from the tank 101 through a duct 113 to the nozzle 105 for discharge into the receptacle such as a cup thereunder. If it is desired to heat the water, closing of a normally open switch 114 effects energization of a flash heater 115 and when the switch 112 is concurrently operated, the water pumped to the nozzle 105 is heated for coffee-making or for just hot water if that is all that is desired. Closing of the switch 114 energizes a signal or indicator light 117 located conveniently adjacent to the switch 114 on the front of the cabinet. Measurement of the volume of water desired is accomplished by the duration of closing of the switch 112. Connection of the electrical circuit of the module 100 with an energy source is by way of terminal

connector plugs 118 which are automatically received in the appropriate jacks 82 when the module 100 is installed in the mount 30.

Another optional plug-in modular appliance unit 120 is depicted in FIGS. 11 and 12, wherein the housing 47 provides an insulated refrigerator/heater compartment normally closed by a hinged mounted door 121 having an actuating handle 122. This unit is provided with a thermoelectric refrigerator/heater unit 123 in a circuit with a temperature control and selector unit 124. Control of an operating electrical circuit is through an off-on switch 125 conveniently mounted on the front of the cabinet. In addition, a heat/cool selector switch of preferably double pole/double throw type is provided on the front of the cabinet for controlling the control unit 124, with an indicator lamp 128 observable to show whether the unit 124 is working. Plugs 129 are adapted to effect connection with energy source automatically when the module 120 is installed in the mount 30.

In FIGS. 13 and 14 is depicted what may be referred to as an entertainment plug-in module unit 130. In this instance, there is housed within the casing 47 any preferred combination AM, FM radio and tape receiver and player. Various features of the combination are reflected in the front of the cabinet and including, for example, an on-off and volume control knob 131 associated with a tone control dial 132, a tuning knob 133 with an associated indicator panel 134, a set of AM selector buttons 135, a set of FM selector buttons 137, an illuminated AM radio control switch 138, an illuminated FM radio control switch 139 and an illuminated tape player switch 140 for playing tape recordings, a slot 141 is receptive of a tape cassette or 8-track tape holder 142. For tape storage, compartments 143 are provided having their bottoms sloping downwardly inwardly. Installation of the module 130 in the mount 30 is designed to effect automatically connection of the circuitry of the module through the jack bar 83 with electrical energy source and ground wires 87 through the medium of respective plugs 144 received in the appropriate jacks 82. In addition, in this instance, plugs 145 effect arming connection through selected ones of the jacks 82 with leads 147 to suitable sound reproducers or speakers such as front or rear speakers mounted in an automobile, while plugs 148 engaging in other selected of the jacks 82 effect electrical arming connection with leads 149 to other speakers such as either front or rear speakers alternate to the speakers to which the leads 147 are connected. There may also be an antenna connection by way of a plug 150 engaging in another of the jacks 82 to effect connection through a lead 151 with an antenna.

On reference to FIGS. 15 and 16, a closed circuit TV plug-in module unit 155 is shown having, similarly as all other of the modules, the basic housing casing 47 and in this instance provided in the front thereof within a suitable window opening 157 with a television tube screen 158 mounted in association with suitable receiver means 159 connected with a control unit 160 while the electrical circuit is controlled by an on-off switch 161 suitably mounted on the front of the cabinet, with an indicator lamp 162 also mounted on the front of the cabinet to provide visual indication of operation of the circuit. The usual electrical energy connections are effected through plugs 163 which automatically connect with the appropriate jacks 82 of the jack

bar 83 when the unit 155 is installed in the mount 30. At the same time a suitable set of plugs 164 effects arming connection through selected ones of the jacks 82 with a wiring harness 165 connected to a rear mounted TV camera 167. This arrangement is especially useful for motor vehicles or watercraft where the usual rear view mirror arrangements are inconvenient or inadequate.

For regular TV receiver purposes, a plug-in module unit 170 (FIGS. 17 and 18) may be employed wherein the casing 47 houses any preferred relatively small TV receiver including a tube screen 171 exposed through a window opening 172 in the front of the casing, and with various controls indicators conveniently located on and in association with the front of the cabinet, such as VHF and UHF tuning knob means 173 associated with an indicator dial 174. Various additional control knobs, control buttons and the like are provided in a cluster 175 and may include those for television control such as vertical hold, horizontal hold, brightness, contrast, on-off and volume control members. Storage space may be provided in the lower portion of the cabinet, either in an open condition or equipped with a drawer 177. Installation of the module 170 into the mount 30 automatically effects electrical connection by means of plugs 178 through the appropriate jacks 82 of the jack bar 83 with electrical energy source, through a plug 179 with an antenna lead 180 and, where required by law, a connection through plugs 181 with a wiring harness 182 to an ignition/transmission interlock.

For telephonic communication, a plug-in module unit 185 (FIGS. 19 and 20) is adapted to be selectively installed in the mount 30 and wherein the standardized cabinet 47 has therein a compartment 187 opening through the front thereof within which a telephone hand set 188 is accommodated desirably equipped with a key lock 189. Above the compartment may be installed a suitable speaker/transmitter behind a grill 188a which may comprise a perforated area in the front panel of the housing. For channel selection, a cluster of buttons 189a may be provided on the casing front wall panel. Automatic connection with electrical energy source is adapted to be effected by suitable plugs 190 which connect with the appropriate jacks 82 of the jack bar 83 automatically when the module is installed. In addition, an antenna plug 191 is adapted to make arming connection with the appropriate jack 82 to which is connected an antenna lead 192.

In FIGS. 21-23, a vanity unit in the form of a plug-in module 195 is depicted wherein the casing 47 houses a mirror 197 in a window opening 198, with the mirror mounted tiltably on pivot means 199 on a horizontal axis to be swung to the most convenient tilted attitude for the convenience of a user such as in the driver compartment of an automobile, there being a stop 200 provided for maximum tilt of the mirror. At each side of the mirror 197 illumination means such as respective lamps 201 may be provided, controlled through a switch 202 suitably mounted on the front of the cabinet and connected in an electrical circuit having connector plugs 203 which automatically are received in the proper jacks 82 of the jack bar 83 to provide connection with the electrical energy source. In addition, there may be storage facility such as a pull-out utility drawer 204 mount in the cabinet 47 below the mirror for access through the front of the cabinet.

On references to FIGS. 24 and 25, a plug-in module unit 205 is depicted which provides for an electrical appliance outlet and for battery charging. Although the cabinet 47 may include a front opening storage compartment 207 of generous proportions, ample room is provided within the cabinet to house an inverter unit 208 by which 12 volt D.C. electrical current is converted into 117 volt A.C. current at an outlet receptacle 209 conveniently mounted for access on the front panel of the cabinet. A battery charger unit 210 housed within the cabinet is connected with a charging meter 211 having a dial readily observable on the front wall of the cabinet. A double pole, double through switch 212 conveniently operable on the front of the cabinet selectively connects the inverter or charger unit in a battery circuit under the control of an on-off switch 213. An indicator light 214 shows when the inverter circuit is functioning and an indicator light 215 shows when the charger unit circuit is operating. Upon installation of the module 205 in the mount 30, electrical connection plugs 217 engage in the appropriate jacks 82 to complete a circuit with the energy source such as the battery of a vehicle. Simultaneously, plugs 218 connect with respective jacks of the jack bar 83 to effect arming connection with electrical leads of a cable 219 which may be mounted on a take-up reel 220 and has a terminal plug 221 by which it is adapted to be connected into a house current supply receptacle when it is desired to charge the vehicle battery through functioning of the charger unit 210. In addition, plugs 222 connected with the charger unit 210 are connected in suitable of the jacks 82 connected with battery clamp cables 223 which are selectively attachable to the battery to be charged.

Another desirable plug-in module appliance unit 225 (FIGS. 26 and 27) provides in the cabinet 47 not only storage space 227, but also a tire deflation warning unit 228 and a car jack control unit 229. Suitable respective detector devices such as may include normally open electrical switches 230 are respectively associated with the four wheels of the vehicle and the spare tire such that when any of the tires deflate to any predetermined degree, the associated switch will close and through the warning unit 228 illuminate a respectively associated warning lamp 231 conveniently mounted for observation on the front of the cabinet. In the absence of a spare tire, the warning lamp associated with its detector circuit may be deactivated by opening a normally closed switch 232. Suitable electrical connections are provided between the car jack control unit 229 and respective car jacks 233 which may be suitably mounted on the vehicle frame adjacent to the respective wheels. Operation of any of the jacks 233 selectively is through the medium of respective two-way switches 234 which are operable on the front of the cabinet 47 and may be located adjacent to the warning lamps for the respective tires of the associated wheels, with suitable identification on the front panel of the cabinet, as shown. In order to avoid accidental operation of any of the car jacks, the operating circuit for the control unit 229 is desirably normally inactive but is adapted to be activated through a master control switch 235 which may be of the key operated type. Electrical connections with energy source are provided through plugs 237, which, together with plugs 238 connected with the warning unit and plugs 239 connected with the car jack control unit, effect electrical arming connection

through the appropriate ones of the jacks 82 of the jack bar 83 as an incident to installing the module 225 in the mount 30.

As depicted in FIGS. 28 and 29, a desirable plug-in modular appliance unit 240 is equipped with distance measuring means which will enable the operator of a motor vehicle or other vehicle, such as a water-craft, to receive reasonably accurate information as to distance of an object such as another vehicle or craft or a stationary object in front of the vehicle. This will greatly assist those vehicle operators who have difficulty in estimating distances by simple observation. To this end, the module 240 has mounted within the cabinet 47, such as above a forwardly opening storage space 241, a control unit 242. This control unit which may be of the integrated circuit computer type is suitably connected to sensors which may be of the dopler shift radar type and for automobile use comprising a left bumper sensor 243 and a right bumper sensor 244. On the front of the cabinet 47 is located a digital read-out device 245 to which information from the sensors 243 and 244 is transmitted by the control unit 242 in terms of distance of detected object forwardly from the associated vehicle. In addition, on the front of the housing is conveniently located a set of switches including an on-off circuit control switch 247, a passing selector switch 248 and a normal operation selector switch 249. These switches 248 and 249 respectively condition the control unit to indicate from the distance data information fed thereto from the sensors 243 and 244 whether the distance between the associated vehicle and an on-coming vehicle or other object is ample at the speed at which the associated vehicle is traveling for safe passing when the selector switch 248 is closed, or whether the distance between the vehicle or vehicles ahead of the associated vehicle is adequate at the speed at which the associated vehicle is traveling during normal driving when the selector switch 249 is closed. If, when either of the switches 248 or 249 is closed, a safe distance is not indicated, a red signal light 250 will illuminate, and if a safe distance is indicated, a green signal light 251 will flash on. At the same time, of course, the digital read-out 245 will show in terms of numerical evaluation the actual distance computed by the control unit 242. In order to feed information as to the speed of travel of the associated vehicle, a sensing circuit 252 connects the control unit with suitable operating mechanism of the associated vehicle such as the distributor thereof. Automatically on installation of the module 240 into the mount 30 suitable electrical connections are effected in appropriate ones of the jacks 82 by basic electrical supply plug 253, speed sensor plug 254 and distance sensor plug 255.

It will be understood, of course, that although a substantial number of different plug-in modular appliance units have been disclosed by way of example, that any other appliance module having desired facilities and susceptible of plug-in mounting in the mount 30 may be provided on a custom or optional availability basis. Thus, the mount is basic to all of the modular units. By easy removability, interchangeability, portability and versatility, the modular units are adapted to be used selectively on or in association with a plurality of different vehicles including watercraft, portable or permanent living or shelter areas or structures, and the like.

It will be understood that variations and modifications may be effected without departing from the spirit and scope of the novel concepts of this invention.

I claim as my invention:

1. In a plug-in modular appliance unit system:
  - a mount having a forwardly opening appliance-receiving chamber therein;
  - means on the mount by which it is attached to a supporting structure;
  - a plurality of separate and individual modular utility appliance units each of which has a housing providing a storage space therein and a front end wall provided with an access opening into the space, each housing carrying at least one electrical device accessible at the front of the unit for performing a utilitarian function;
  - said modular appliance unit housings being selectively and interchangeably received in said chamber by pushing the selected unit rearwardly through the opening into the mount chamber;
  - means on said mount and on said unit housings to stop inward movement of the selected unit into the mount chamber with the front end wall of the selected unit visually and manually accessible at the mount chamber opening so that access can be had into said storage space within the selected unit and access can be had to said electrical device of the selected unit;
  - a plurality of separable electrical connectors carried by said mount within said chamber, certain of said connectors being electrically connected with a power source and other of the connectors being connected with at least one selected electrical utility device located outside of said mount;
  - each of said units carrying separable electrical connectors which are oriented in a pattern in accordance with the individual functions of that unit;
  - the separable electrical connectors of each of the units including certain ones for connection with the power source separable connectors of the mount carried connectors for energizing the electrical device of the unit;
  - at least certain of the units having additional separable connectors engageable in arming relation selectively with said mount carried connectors connected with a selected outside electrical utility device;
  - and the separable connectors of the selected unit received in the mount chamber effecting electrical connection with said mount carried power source connectors and selectively with those mount carried connectors which in addition match the individual pattern of the connectors carried by selected unit and thereby effecting electrical arming connection exclusively with only said outside electrical device connected with the selected mount carried connectors, and leaving other of the mount carried connectors unused until other of the units having different patterns of connectors for arming connection with other selected outside utility devices are selectively and interchangeably inserted into said mount chamber.
2. A system according to claim 1, comprising a bar mounted across the rear of said chamber and having opposite ends at opposite sides of said chamber, and a plurality of rows of the mount carried connectors mounted on said bar, said rows of connectors extending

substantially from end to end of the bar, said unit carried connectors being located on the rear end of the units in alignment with the bar mounted connectors which are complementary thereto.

3. A system according to claim 2, said electrical connectors of the bar comprising jack sockets, the electrical connectors of the modular units comprising plugs received in said sockets, and terminals on said connectors on the bar receptive of electrical connectors of selected operating circuits.

4. A system according to claim 1, including a flexible roll-top type door for closing said opening, track means on said chamber mount within said chamber adjacent to said chamber opening to guide said door to open and closed positions relative to said chamber opening and in front of the unit which is received in the chamber, said track means comprising respective vertical tracks at each side of said chamber opening, respective horizontal tracks at each side along the top of said chamber, stop means on the mount spaced inwardly adjacent to said vertical track means, and positioning flange means at the front end of the unit which is received in said chamber engaging said stop means.

5. A system according to claim 1, including latching means comprising a pair of respective spring latches one of which is located adjacent to each end of the upper side of the face of each of the units and having laterally projecting detents engageable with keeper means on the mount, and inwardly depressible releasing plungers having outwardly projecting button ends digitally engageable to release the latch detents and requiring that both of the plungers be simultaneously releasably depressed to release both of said latches to free the unit from the mount.

6. A system according to claim 1, including spring biased unit-ejecting plunger means mounted in balanced relation on the mount at the inner end of said chamber and projecting forwardly away from the mount carried separable connectors, said plunger means being engaged and loaded by a portion on the rear end of the selected unit within the chamber pressing thereagainst for biasing the unit forwardly relative to said mount carried connectors and outwardly relative to said chamber, and latch means carried by the front walls of said units and engaging with the mount to retain the selected unit within said chamber against outward displacement due to the bias of said plunger means, said latch means being digitally operable to release the selected unit from the mount for outward ejection by the bias of said plunger means and to thereby effect separation of the electrical connectors on the selected unit from the mount carried connectors.

7. A system according to claim 6, wherein said plunger means comprise a pair of plungers respectively mounted adjacent to opposite lateral sides of the rear end of said chamber, and said latch means comprise a pair of latches mounted on the front walls of each of the units at respective opposite sides thereof and each of the latches having an individually digitally operable latch releasing member accessible at the front wall of the respective units and requiring simultaneous actuation to effect release of the selected unit from the mount.

8. A system according to claim 7, wherein said releasing members of the latches comprise spring biased plungers projecting outwardly from the front walls of

the units and depressable inwardly to effect release of the latches.

**9. In a plug-in modular appliance unit system:**

a mount providing a hollow space therein serving as an appliance-housing chamber; 5  
means on the mount for attaching it to a supporting structure;  
means on said mount defining an appliance-receiving opening into said chamber;  
a modular appliance unit releasably mounted in said 10 chamber;  
means releasably retaining the unit within said chamber;  
said unit including electrical equipment;  
means on the unit and on the mount providing electrical operating circuit connection for the unit; 15  
a flexible roll-top type door for closing said opening into said chamber;  
track means on said mount within said chamber adjacent to said opening guiding said door between 20 open and closed position relative to said opening, said mount including a wall along the inner side of which the door extends in the open position;  
said track means comprising respective vertical tracks at each side of said opening, and respective 25 horizontal tracks at each side along said wall, said wall being at the top of said chamber;  
stop means spaced inwardly relative to said vertical track means;  
and positioning flange means at the front end of the 30 unit;  
the front-to-rear distance between said stop means and said vertical tracks being ample to effect inseting of said front end of the unit for closing of said 35 door in front of said front end, spring biased unit-ejecting plunger means mounted in balanced relation on the mount at the inner end of said chamber and projecting toward said opening and away from said mount carried separable connectors, said 40 plunger means further separating said mount and unit connectors.

**10. In a plug-in modular appliance unit system:**

a mount providing a hollow space therein serving as an appliance-housing chamber; 45  
means on the mount by which it is attached to a supporting structure;  
means on said mount defining an appliance-receiving opening into said chamber;  
said chamber having an inner end;  
a modular utility appliance unit received in said 50 chamber by pushing through said opening and having an outer end visually and manually accessible at said opening and having an inner end within said chamber;  
separable electrical connectors fixed on the inner end of said unit; 55  
separable electrical connectors fixedly carried by the mount at the inner end of said chamber and to which the connectors on the unit are connectible by pushing the unit into the mount; 60  
spring biased unit-ejecting plunger means mounted in balanced relation on the mount at the inner end of said chamber and projecting toward said opening and away from said mount carried separable connectors; 65  
said plunger means being engaged and loaded by a portion on the inner end of the unit pressing there-

against for biasing the unit outwardly relative to said mount carried connectors and outwardly relative to said opening;

said mount having means for guiding the unit within said chamber between said opening and said connectors on the mount;  
and latch means carried by the outer end of said unit and engaging with the mount to retain the unit within said chamber against outward displacement due to the bias of said plunger means;  
said latch means being digitally operable to release the unit from the mount for outward ejection by the bias of said plunger means and to thereby effect separation of said electrical connectors on said unit from the mount carried connectors, said plunger means further separating said mount and unit connectors.

**11. A system according to claim 10, wherein said plunger means comprise a pair of plungers mounted adjacent to laterally opposite sides of the inner end of said chamber, and said latch means comprise respective latches generally aligned at the outer end of the unit with said plungers and having means requiring simultaneous actuation to release the unit from the mount.**

**12. A system according to claim 11, wherein said means of the latches comprise respective outwardly projecting spring biased plungers which must be pushed inwardly simultaneously to release the unit from the mount.**

**13. A method of attaining a selected utility function in a modular appliance unit system, comprising:**

providing a mount having a forwardly opening appliance-receiving chamber therein;  
attaching said mount in an operating position on a supporting structure;  
providing on said mount within said chamber a plurality of separable electrical connectors;  
connecting some of the mount carried connectors electrically with a power source;  
connecting certain other of the mount carried connectors with electrical means other than said power source and located outside of said mount;  
providing a plurality of separate and individual modular utility appliance units each having a housing providing a storage space therein and a front wall provided with an access opening into the space;  
providing in each of the unit housings at least one electrical device accessible at the front of the unit and capable of performing a utilitarian function with respect to that unit;  
providing on each of said units separable electrical connectors which are oriented in a pattern in accordance with the individual functions of that unit;  
selecting one of said units and inserting it into the mount chamber until the front wall of the selected unit is aligned with the opening from the chamber;  
effecting electrical connection of separable connectors on the selected unit with the mount carried power source connectors;  
and selectively effecting connection of additional separable connectors of the selected unit with those certain other mount carried connectors which match the individual pattern of the connectors carried by the selected unit, thereby effecting electrical arming connection exclusively with only the selected outside electrical device connected with the selected certain other mount carried con-

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nectors and leaving other of the mount carried connectors unused until other of the units having different patterns of connectors for arming connection with other selected outside utility devices are selectively and interchangeably inserted into said mount chamber.

14. A method according to claim 13, comprising removing said selected modular appliance unit from said chamber and thereby separating its connectors from the mount carried connectors, selecting another of the appliance units having a different pattern of separable electrical connectors, inserting said another selected unit into said chamber, and effecting separable connection of connectors carried by said another selected unit with the power source connectors of the mount and also effecting separable electrical connection of other of the connectors of said another selected unit with selected ones of the previously unused mount carried

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connectors for electrical arming connection with a different outside electrical utility device connected with said selected previously unused mount carried connectors.

15. A method according to claim 13, including during the pushing of the selected unit into the mount chamber pressing an inner end portion on the unit housing against spring biased ejection means carried by the mount at the inner end of said chamber, latching the unit in the mount to retain the unit within the chamber against outward displacement due to the bias of said biasing means, releasing said latching means and effecting outward ejection movement of the unit by force of said ejection means and thereby effecting separation of said electrical connectors on the unit from the mount carried connectors.

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# MIDS

## Modular Distribution System



**Vent Master**

Solutions for Commercial Facilities Worldwide

# Modular Distribution System for Today's Kitchen

The Vent Master Modular Distribution System (MDS) is a custom built general utility center that provides distribution controls for as many foodservice equipment mechanical services as required. It can include any combination of gas, hot water, cold water, chilled water, compressed air, electrical power, fire and safety control, steam supply and condensate return line...all in a single stainless steel structure.



The MDS is a compact assembly that provides a practical, versatile and efficient way of distributing utilities in commercial cooking operations. MDS units are available in incremental lengths, and are suitable for island or wall mount installations. Not only is it a convenient way of distributing the kitchen utilities, it is economical. The system is easily moved and modified to suit different arrangements of the cooking equipment.

The MDS is a totally enclosed unit with no exposed piping or electrical conduits except for the main connections and even these can enter the riser cabinet from below. The totally enclosed structure simplifies cleaning, servicing and maintenance. Simplicity, however, goes beyond servicing and maintenance. Because MDS units are inspected, tested and UL labeled before they leave the factory, they have additional advantages over separately installed utilities. One outstanding advantage is the overall economy during the life cycle of the installation.

The use of a MDS unit actually reduces the cost of installation because of the single point hookup for each utility in the unit.

Regarding equipment changes, the MDS unit is easily expanded (when system capacity permits). It can accommodate additional equipment or cooking equipment arrangements without wiring or plumbing changes. Adding taps, valves and flow devices in the piping systems, or new power outlets is a relatively simple matter. Versatility and capacity for change and expansion is a strong feature of the units built by Vent Master.

For servicing and maintenance, there is easy access to its electrical and mechanical components.

Clearly then, an MDS unit is superior in every way to the old method of providing decentralized utilities to cooking equipment.

## Full Function Capabilities

Any or all of the following utilities can be included in a Vent Master MDS



Gas



Cold Water



Chilled Water



Electrical



Steam Supply



Chilled Water Return



Hot Water



Steam Return



Compressed Air

*We help our customers to improve the profitability of their operations with indoor climate technology*

## ***Standard Features:***

**ELECTRICAL** - Main breaker and shunt trip, distribution breakers and the required industrial breakers. Single phase or 3-phase safety shunt trip breakers.

**GAS** - Gas main with automatic shut off valve, tap for equipment, and shut off valves for each piece of equipment served.

**WATER** - Hot and cold water lines with taps and valves for separate equipment requirements.

**STEAM** - Steam and condensate returns with stream trap, blow down, taps and valves.

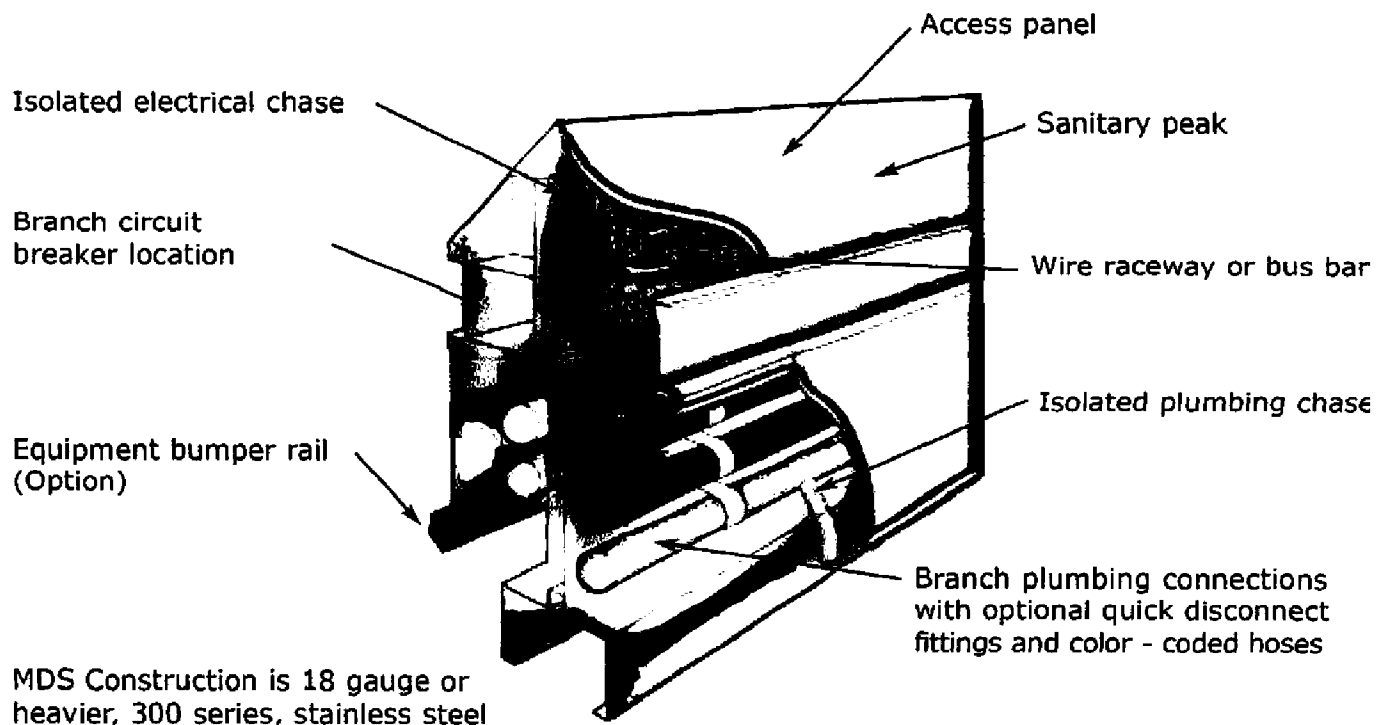
**CONTROLS** - Built in controls for fire system interlock and fan controls.

**EQUIPMENT LABEL** - Identifies appliance connection locations.

## ***Optional Features:***

- Hoses and Quick Disconnects
- Electrical Cords and Plugs
- Restraining Devices
- Ground Fault Protection
- Circuit Status Indicators
- Bumper Rails
- Exhaust Hood Controls in the Risers
- Fire Protection Piping and Controls in the Risers
- Fan Motor Starter Contactors and Labeled Field Wire Terminals
- Adjustable Riser Bases
- Prison Package
- Fill Faucets

## **MDS Raceway Schematic**



# *Vent Master's Engineered Systems also include:*

*Exhaust Hoods*



*Ultra Violet Technology Systems*



*Ventilated Ceiling Systems*



*Ecology Filtration Systems*



*Kiosk Ventilation Systems*



*Modular Distribution Systems*



*Fire Protection*



## *For more information:*

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Continuous product improvement is a Vent Master policy. Therefore, specifications and design are subject to change without notice. Please consult factory.

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